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10/645,501	08/22/2003	David Peyton Cox	200206848-1	8776

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HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER	
PANTOLIANO JR, RICHARD	
ART UNIT	**PAPER NUMBER**
2194	

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/645,501	COX, DAVID PEYTON	
	Examiner	Art Unit	
	Richard Pantoliano Jr	2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

WILLIAM THOMSON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This is the initial office action for Application# **10/645501** filed on **22 August 2003** with amended drawings received on **16 December 2003**. **Claims 1-28** are currently pending and have been considered below.

Claim Objections

2. **Claim 9** is objected to because of the following informalities: reference is made to "the helper driver", but no helper driver was mentioned in the claim or its antecedent claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claim 6** is rejected under 35 U.S.C. 102(e) as being anticipated by Stokes et al (US PGPub: 2004/0230988).

5. As per **Claim 6**, Stokes et al discloses the invention substantially as claimed including a method used while assembling in processor memory a stack of device objects (DOs) representing a device, the operating system of the processor having a

kernel, the device having a corresponding physical device object (PDO), the method comprising:

a) determining a first driver registered to the device *(para. [0034]-[0039])*;

b) invoking the first driver, which includes passing the PDO of the device to the first driver *(para. [0034]-[0039])*; and

c) passing the PDO from the first driver to a second driver or to a component of the kernel *(para. [0034]-[0039])*.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 1-5, 7-14, 20-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Applicant's Admitted Prior Art) in view of Stokes et al (US PGPub: 2004/0230988).

8. As per **Claim 1**, AAPA discloses the invention substantially as claimed including a method used while building in processor memory a stack of device objects (DOs) representing a device, using a multi-role driver for a plurality of roles at least one of which corresponds to the device *(pg 2, para. [0004] and [0005])*.

9. AAPA does not disclose registering a plurality of helper drivers so as to uniquely correspond to the plurality of roles, respectively, each helper driver mapping uniquely to

one of the multiple roles of the multi-role driver, respectively; and indirectly specifying a corresponding one of the multiple roles of the multi-role driver by specifying the helper driver mapped thereto. Stokes et al discloses including an intermediate driver in between a device driver and a computer's operating system that is registered in place of the original device driver and forwards all attempts at accessing the device from the intermediate driver to the device driver *(para. [0034], [0038] and [0039])*.

10. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of AAPA with the teachings of Stokes et al. One would have been motivated by the ability of the intermediate driver to allow for the extension of functionality of the original device driver, such as offering support to a new device, without needing to modify the original driver file or interrupt the functionality of the original driver *(Stokes et al, para. [0040]-[0045])*.

11. As per **Claim 2**, AAPA discloses wherein the multi-role driver is operable to run in the WINDOWS Driver Model environment *(para. [0004])*. Stokes et al discloses wherein the helper drivers are operable to run in the WINDOWS Driver Model environment *(para. [0034])*.

12. As per **Claim 3**, AAPA discloses wherein a role is determined according to a device type for which the multi-role driver is invoked and the extent of the stack at the point at which the multi-role driver is invoked *(para. [0008])*.

13. As per **Claim 4**, AAPA discloses wherein each of the multiple roles in the multi-role driver has a corresponding DOPush function *(para. [0007] and [0008])*. Stokes et al discloses wherein the intermediate driver can access the functionality of the original driver *(para. [0034], [0038] and [0039])*.

14. As per **Claim 5**, Stokes et al discloses wherein each intermediate driver communicates with an original device driver, accessing the same functions that would be accessed by calls made by the operating system *(para. [0034], [0039] and [0040])*.

15. As per **Claim 7**, AAPA discloses the invention substantially as claimed including a method used while assembling in processor memory a stack of device objects (DOs) representing a device, the device having a corresponding physical device object (PDO), the method comprising:

a) determining a driver registered to the device *(para. [0003]-[0005])*; and

b) invoking the driver, which includes passing the PDO of the device to the driver *(para. [0006])*.

16. AAPA does not disclose passing the PDO away from the driver without attempting to attach to the stack a DO corresponding to the driver. Stokes et al discloses the use of an intermediate driver that is registered with the operating system instead of the original device driver and forwards necessary data structures and requests to said device driver *(para. [0034], [0038], [0039])*.

17. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of AAPA with the teachings of Stokes et al. One would have been motivated by the ability of the intermediate driver to allow for the extension of functionality of the original device driver, such as offering support to a new device, without needing to modify the original driver file or interrupt the functionality of the original driver *(Stokes et al, para. [0040]-[0045])*.

18. As per **Claim 8**, AAPA discloses the invention substantially as claimed including a method used while assembling in processor memory a stack of device objects (DOs) representing a device, there being a multi-role driver for a plurality of roles at least one of which corresponds to the device, the device having a corresponding physical device object (PDO), the method comprising:

a) providing a plurality of DOPush functions in a multi-role driver *(para. [0007])*;

b) loading the multi-role driver into the memory *(para. [0005])*; and

c) invoking one of the DOPush functions, which includes passing the PDO of the device to the invoked DOPush function *(para. [0007])*.

19. AAPA does not disclose the external invoking of the functions within the multi-role driver. Stokes et al discloses the use of an intermediate driver that is registered with the operating system instead of the original device driver and forwards necessary data structures and requests to said device driver *(para. [0034], [0038], [0039])*.

20. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of AAPA with the teachings of Stokes et al. One would

have been motivated by the ability of the intermediate driver to allow for the extension of functionality of the original device driver, such as offering support to a new device, without needing to modify the original driver file or interrupt the functionality of the original driver *(Stokes et al, para. [0040]-[0045])*.

21. As per **Claim 9**, AAPA discloses wherein a routine is called to pass the necessary data to the device driver function (para. [0005]). Stokes et al discloses wherein the intermediate driver is used to make all necessary calls to the device driver for the operating system *(para. [0034], [0038], [0039])*.

22. As per **Claim 10**, AAPA discloses wherein the multi-role driver is operable to run in the WINDOWS Driver Model environment *(para. [0004])*.

23. As per **Claim 11**, Stokes et al discloses only the intermediate driver being directly accessible by the operating system *(para. [0034], [0038], [0039])*.

24. As per **Claim 12**, AAPA discloses wherein a role is determined according to a device type for which the multi-role driver is invoked and the extent of the stack at the point at which the multi-role driver is invoked *(para. [0008])*.

25. As per **Claim 13**, AAPA discloses the invention substantially as claimed including a method used while assembling in processor memory a stack of device objects (DOs)

representing a device, the method comprising: providing a multi-role driver for a plurality of device types *(para. [0005])*.

26. AAPA does not disclose not registering, in the registry of the operating system, the multi-role driver as having a role in assembly of the stack. Stokes et al discloses the use of an intermediate driver that is registered with the operating system instead of the original device driver and forwards necessary data structures and requests to said device driver *(para. [0034], [0038], [0039])*.

27. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of AAPA with the teachings of Stokes et al. One would have been motivated by the ability of the intermediate driver to allow for the extension of functionality of the original device driver, such as offering support to a new device, without needing to modify the original driver file or interrupt the functionality of the original driver *(Stokes et al, para. [0040]-[0045])*.

28. As per **Claim 14**, AAPA discloses wherein the multi-role driver is operable to run in the WINDOWS Driver Model environment *(para. [0004])*.

29. As per **Claim 20**, being the apparatus performing the method of **Claim 1,** is rejected for the same reasons as **Claim 1** above.

30. As per **Claim 21**, being the apparatus performing the method of **Claim 2,** is rejected for the same reasons as **Claim 2** above.

31. As per **Claim 22**, being the apparatus performing the method of **Claim 3,** is rejected for the same reasons as **Claim 3** above.

32. As per **Claim 23**, being the apparatus performing the method of **Claim 4,** is rejected for the same reasons as **Claim 4** above.

33. As per **Claim 24**, being the code arrangement on a machine-readable medium with said code arrangement performing the method of **Claim 1,** is rejected for the same reasons as **Claim 1** above.

34. As per **Claim 25**, being the code arrangement on a machine-readable medium with said code arrangement performing the method of **Claim 2,** is rejected for the same reasons as **Claim 2** above.

35. As per **Claim 26**, being the code arrangement on a machine-readable medium with said code arrangement performing the method of **Claim 3,** is rejected for the same reasons as **Claim 3** above.

36. As per **Claim 27**, being the code arrangement on a machine-readable medium with said code arrangement performing the method of **Claim 4,** is rejected for the same reasons as **Claim 4** above.

37. As per **Claim 28**, being the code arrangement on a machine-readable medium with said code arrangement performing the method of **Claim 5,** is rejected for the same reasons as **Claim 5** above.

38. **Claims 15-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes et al (US PGPub: 2004/0230988) in view of AAPA (Applicant's Admitted Prior Art).

39. As per **Claim 15**, Stokes et al discloses the invention substantially as claimed including a code arrangement on a machine-readable medium execution of which facilitates assembling in processor memory a stack of device objects (DOs) representing a device, the machine-readable code arrangement comprising:

a) a plurality of helper driver code portions *(para. [0034], [0038], [0039])*; and

b) an installer code portion for registering the plurality of helper driver code portions so as to uniquely map to the multiple roles, respectively; each helper driver code portion being operable to receive a corresponding PDO and pass the PDO to another driver *(para. [0034], [0038], [0039])(This is inherent, since the helper driver must register with the operating system)*.

40. Stokes et al does not disclose a multi-role driver code portion which corresponds to the device, the multi-role driver being executable from the plurality of helper drivers based on the functionality being accessed, or the attaching of the helper drivers to the

stack without attaching the multi-role driver to the stack. AAPA discloses a multi-role driver capable of mapping to many roles of a device *(para. [0004]-[0006])*.

41. One of ordinary skill in the art at the time of invention would have been motivated to modify the code arrangement discussed by Stokes et al with the teachings of AAPA to allow for the distribution of multiple devices drivers in one binary file, thereby simplifying the packaging and distribution of the driver and allow for the extending of functionality of said multi-role driver in the event that a portion of the driver code required updating.

42. As per **Claim 16**, AAPA discloses wherein the machine-readable code comprises instructions for the multi-role driver to be operable to run in the WINDOWS Driver Model environment *(para. [0004])*. Stokes et al discloses wherein the helper drivers are operable to run in the WINDOWS Driver Model environment *(para. [0034])*.

43. As per **Claim 17**, AAPA discloses wherein the machine-readable code comprises instructions for a role to be determined according to a device type for which the multi-role driver is invoked and the extent of the stack at the point at which the multi-role driver is invoked *(para. [0008])*.

44. As per **Claim 18**, Stokes et al discloses wherein the functionality of the device driver is exposed to the operating system via the intermediate driver *(para. [0034], [0038], [0039])*.

45. As per **Claim 19**, Stokes et al discloses wherein each intermediate driver communicates with an original device driver, accessing the same functions that would be accessed by calls made by the operating system *(para. [0034], [0039] and [0040])*.

Conclusion

46. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a) Hyder et al (US Pat: 6,233,624) discloses a system and method for layering network device drivers on a Windows system;

b) Duncan et al (US Pat: 5,675,781) discloses a method of managing storage volumes on a computer

c) Shaw et al (US Pat: 5,604,843) discloses a method and system of minidrivers that can be used to implement or extend the functionality of a device driver;

d) Simpson et al (US PGPub: 2003/0140095) discloses the use of universal drivers to allow for a generic interface for device drivers on different platforms; and

e) Bader et al (US Pat: 6,230,118) discloses a system utilizing universal drivers with a particular device class and further utilizing minidrivers for any functions specific to a particular device.

47. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Pantoliano Jr whose telephone number is (571) 270-1049. The examiner can normally be reached on Monday-Thursday, 8am - 4 pm EST.

48. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Thomson can be reached on (571)272-3718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

49. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RP
11/27/2006

WILLIAM THOMSON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100